Yellow Migrant (Catopsilia gorgophone) and Orange Migrant (C. scylla) on Senna gaudichaudii

METAMORPHOSIS
AUSTRALIA

Magazine of the Butterfly & Other Invertebrates Club

ISSUE NO: 62 DATE: SEPTEMBER 2011 ISSN: 1326-0006
Price $6.00 http://www.boic.org.au

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Planning and Organization Meetings

A quarterly meeting is scheduled in order to plan club activities and the magazine. See BOIC Programme.

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Membership fees are $25 for individuals, schools and organizations.

Aims of Organization

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

Magazine Deadlines

If you want to submit an item for publication the following deadlines apply:
March issue – February 1st June issue – May 1st
September issue – August 1st December issue – November 1st

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Cover

Yellow Migrant (*Catopsilia gorgophone*) and Orange Migrant (*C. Scylla*) on *Senna gaudichaudii* – Painting by Lois Hughes. Prints available from the artist. Ph.07 3206 6229

From the President

Each quarter, as I look at the various contributions to the magazine, I am again reminded of the great pool of members and experts who make this publication an interesting, informative and enjoyable read. This edition is no exception. While most of the following names can be found associated with the articles in this edition, there are others who are behind the scenes consultants or advisers. I will list them all here: Skye Blackburn, Daphne Bowden, Bryan Cantrell, Densey Clyne, the late Murdoch de Baar, Russell Denton, Margaret Greenway, Peter Hendry, Shona Hocknull, Lois Hughes, Wesley Jenkinson, Amanda Johnson, Ross Kendall, Jeannine and Nathan Kimber, Roger Kitching, Christine Lambkin, Trevor Lambkin, Glen Leiper, Ron May, John Moss, Greg Newland, Robert Raven, Michael Rix, Hilton Selvey, Alicia Steward, Linda Sulakatku, Robert Whyte and Richard Zietek. I thank all for their generous "work" and wish to express deep appreciation to Daphne for the prolonged, detailed coordination and consultation that she undertakes before assembling the parts into a very commendable whole.

Congratulations to our junior member Nathan Kimber for sharing his passion and knowledge with children on his school visits. He is a worthy ambassador of the Club.

There are two field trips planned for October and November and for those members in South-east Queensland I encourage you to come along to enjoy the company of your fellow members and to observe/study the biodiversity of each location.

If you have suggestions for a field trip or visit, we would love to hear from you.

Best wishes **Ross**

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A comparison of the Yellow Migrant, *Catopsilia gorgophone* (Boisduval, 1836) and the Orange Migrant, *C. scylla* (Linnaeus, 1764) [Lepidoptera: Pieridae] with comment on evidence for natural hybridisation

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Preamble

In September 2003 (BOIC Newsletter No. 30) the first author (JTM) made a statement in an article on *Senna* (host plants for three of our *Catopsilia* migrant pierids) that there was still debate on whether the Yellow Migrant (*Catopsilia gorgophone*) and the Orange Migrant (*C. scylla*) were one or two species – their male genitalia, life histories and host plants appearing to be identical. Furthermore, he noted that the jury was still out regarding this and suggested that modern protein analyses and genetic comparisons would no doubt throw more light on the subject.

Fig. 1
C. gorgophone form hinda
(male, female)

Fig. 2
Typical
C. gorgophone
(male, female,
below
male underside, female
underside)

Fig. 3
Typical *C. scylla*
(male, female,
below male underside,
female underside)

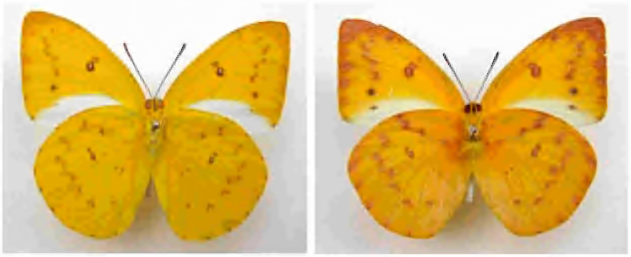

Fig. 4
Atypical specimens
(2 males,
below male, female)

Photos
Wesley Jenkinson

In the ensuing eight years, the DNA work has not yet been done, thus we haven't moved far and the same question could still be asked. However, the evidence mounts that there is some interspecific interaction with probable natural hybridisation.

Historical Background

Braby (2000) in the section on taxonomic status of species *C. gorgophone*, provided evidence for intermediate forms between typical *C. gorgophon*e and *C. scyll*a, from Doomadgee, North Queensland (Pucetti, 1991), Forty Mile Scrub, near Mount

Garnet, Queensland (G. A. Wood, pers. comm.) and historically at Darwin, Northern Territory (Waterhouse & Lyell, 1914). Furthermore, Braby commented that Wood was able to successfully produce these intermediates by deliberate crossing of parents of both species and "rearing their resulting offspring to five generations without infertility."

Observations

This variability has been noted in recent years in a population of the two species in the second author's garden at Beaudesert. Wesley has been observing, collecting and raising wild *C. gorgophone* and *C. scylla* since 2001 and has noted two types of variation. Firstly, he found that the pale form "*hinda*" of *C. gorgophone* (Fig. 1) can occur any time throughout the year, but was more often found in the months from March to May. Secondly, a range of variations were seen which appeared to be intermediate between *C. gorgophone* (Fig. 2) and *C. scylla* (Fig. 3), mostly in the months June, July and September (see Table 1).

These variations (see examples in Fig. 4) don't appear to include the "parallel *hinda*" form of *C. scylla* as detailed in Dunn (1995), as no 'white' *C. scylla* has appeared in this Beaudesert population. It is interesting to speculate that, in this situation, Beaudesert is too far south (= too high in latitude) for this phenomenon to occur.

Results

This tabulation totals 66 individuals of which 21 are atypical variations of *C. gorgophone* and *C. scylla*, suggestive of "intermediate" forms (32% of the observed). 16 are the typical "*hinda*" variation of *C. gorgophone* (53% of all *C. g*), 14 are normal *C. gorgophone* and 15 normal *C. scylla*. Although the methodology for these results was not done under strictly controlled experimentation, it is interesting to note the percentages of both these variations in the two populations.

Early Stages

We have included images of larval and pupal stages of both species (Figs 5-10) and although Valentine (1994), as in Braby (2000), noted that the immature stages of these and "larvae in particular" were indistinguishable, our images do show subtle differences which we detail below.

A comparison of final instar larvae of *C. gorgophone* and *C. scylla* shows differences in the form and degree of the blue spotting above the yellow lateral stripe (which itself is vague in *C. gorgophone* and more defined in *C. scylla*). *C. gorgophone* has dark blue segmental spotting, continuous but clustered, along the lateral aspect and scattered over the dorsum of each segment (Figs 5 and 6). *C. scylla* only has a few lateral blue spots in discreet bundles (Fig. 7). These larval differences further reinforce the position that *C. gorgophone* and *C. scylla* are distinct species. As can be seen in Figures 8, 9 and 10, there are no obvious pupal differences.

Fig. 5 *C. gorgophone* larva (WJ)
Fig. 6 Prepupal *C. gorgophone* larva (RK)
Fig. 7 *C. scylla* larva (RK)
Fig. 8 *C. gorgophone* pupa (RK)
Fig. 9 *C. gorgophone* pupa (WJ)
Fig.10 *C. scylla* pupa (RK)

Photos - Wesley Jenkinson (WJ) and Ross Kendall (RK)

Discussion

However, in view of the fact that the above observations are from the southern end of the range of *C. scylla*, and both species are flying together, we cannot agree with Wood's conclusion as reported in Braby (2000) that "*C. gorgophone* is merely a seasonal and southern form of *C. scylla*, the difference being promoted by factors operating only at the higher latitudes of the breeding distributional range, such as in South East Queensland." Another flaw in this argument is that a perusal of the species distribution, as detailed in Braby (2000), shows *C. scylla* overlapping the range of *C. gorgophone* throughout the whole of the latter's range! Braby further commented "experimental evidence was lacking".

Conclusion

The question arises as to whether the observed variations, (such as the four 'atypical' examples in Fig. 4), are indeed true intermediates and are part of a spectrum of hybrid phenotypes.

Our view is that *C. gorgophone* and *C. scylla* are distinct sibling species which are presumably exhibiting the phenomenon of introgression, which has been noted in other (exotic) butterfly species (and also seen in other insects, notably cicadas) where the similarity of genetic make-up allows for fertile hybrids. In evolutionary terms, the two species diverged, probably through geographical separation at some time in the past, and have subsequently become sympatric in distribution.

Table 1 *Catopsilia* specimens collected and or bred from Beaudesert, Queensland

'Typical' *C.gorgophone*	*C.gorgophone* form '*hinda*'	'Typical' *C.scylla*	*C.gorgophone/scylla* variation
21/03/1986	26/03/2001	24/04/2004	28/04/2004
21/04/1986	30/03/2001	26/04/2004	11/06/2004
21/04/1986	1/12/2002	8/06/2004	11/06/2004
4/04/2001	15/04/2004	6/09/2004	11/06/2004
16/09/2005	8/05/2004	11/09/2004	18/06/2004
11/10/2007	23/09/2005	1/10/2004	18/06/2004
11/10/2007	9/04/2006	1/10/2004	16/07/2004
21/02/2008	9/04/2006	2/10/2004	20/07/2004
3/04/2010	10/04/2006	2/10/2004	21/07/2004
3/04/2010	10/04/2006	13/02/2011	25/07/2004
27/04/2010	11/04/2006	14/02/2011	29/07/2004
13/02/2011	11/04/2006	15/02/2011	29/07/2004
26/02/2011	10/04/2008	15/02/2011	29/07/2004
21/05/2011	2/04/2010	26/03/2011	29/07/2004
	3/04/2010	26/03/2011	28/09/2004
	10/04/2010		29/09/2004
			29/09/2004
			30/09/2004
			30/09/2004
			1/10/2004
			2/10/2004

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Pucetti, M. 1991. Butterflies of Domadgee, Northwestern Queensland. *Victorian Entomologist* **21**: 142-147.

Valentine, P.S. 1994. Backyard Butterflies in Northern Queensland: The 1994 Wet Season. *Victorian Entomologist* **24**: 125-127.

Waterhouse, G.A. and Lyell, G. 1914. *The Butterflies of Australia. A Monograph of the Australian Rhopalocera.* 239 pp., 43 pls. Angus and Roberston., Sydney.

Glue – *Hilton Selvey*

What a strange subject for a magazine devoted to invertebrates I hear you ask? Actually glue is a vital secretion of all butterflies and many other invertebrates, without this glue there would be no butterflies. Indeed, butterfly glue is one of the most astonishing substances associated with insects, and it isn't confined to Lepidoptera.

Consider this: an egg before being deposited has first to be correctly orientated. Its base, the presenting part, must then receive a coating of glue so that the egg, when deposited, will stick to a leaf, generally of the food plant for the larva.

So what are the properties of this glue, properties which are not shared by any man made glue?

1. It must harden immediately the egg is deposited, lest the egg slide off and be lost.
2. It must be non toxic and become like the eggshell itself, part of the first meal of the larva.
3. It must be waterproof, or be washed off by rainwater.
4. It must be capable of sticking to a non-wetable surface.

All in all, this glue is the most astonishing feature of butterflies. Why doesn't the glue harden inside the oviduct? Contact with air must be the starter for the hardening process, which spreads rapidly through all the glue.

The glue comes from the accessory gland. Amongst the Lepidoptera only insects which drop their eggs from the air such as the Hepialidae, lack accessory glands. Accessory glands from other insects produce many other substances. For example eggs of the Lacewing are stuck to a silken stalk produced by the accessory glands. Other insects like the tachinid fly and head lice stick their eggs to a single hair. Anyone who has tried to detach a tachinid fly egg from the larva of the Jezebel Nymph (Nymphalidae *Mynes geoffroyi*) will testify to the strength of the glue.

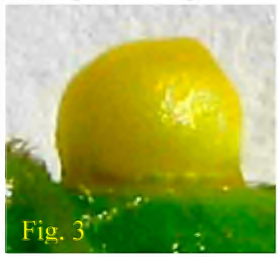

Fig. 1. Shows the glue holding a Birdwing egg (emptied by an assassin bug) to a leaf.
Fig. 2. Shows an egg that wasn't correctly oriented as it was laid. The egg is generally described as being spherical but you can see from this picture that description is far from correct.
Fig. 3. Egg showing a meniscus of glue

The accessory gland in the female butterfly's abdomen opens into the terminal portion of the oviduct just proximal to the opening of the duct, which considering its function is its logical position.

Unfortunately the chemistry of this glue is unknown, when last I enquired. It was to be studied by a scientist from CSIRO in the hope that similar glue might have commercial application. Unfortunately this scientist was put to other tasks before he could even start. (I was to provide the samples of the glue).

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Photos Hilton Selvey

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Life history notes on the Striated Pearl-white, *Elodina parthia* (Hewitson, 1853) Lepidoptera: Pieridae - *Wesley Jenkinson*

This butterfly species, also known as the Chalky Pearl-white (and previously the Chalk White) is frequently encountered along much of eastern Queensland and into New South Wales. It is located in a varied range of habitats, having a preference for the drier forests and woodlands where it often flies with the closely related Southern Pearl-white (*Elodina angulipennis*), the Glistening Pearl-white (*E. queenslandica*) and the Narrow-winged Pearl-white (*E. padusa*). It is generally absent from the wetter rainforests and also penetrates inland west of the Great Dividing Range into the drier regions where the host plants are growing.

The adults have a more defined 'chalky' white appearance compared with the other 'Queensland' Pearl-whites and can be identified by the duller 'striated' pattern on the underside of the hindwing. The species is slightly smaller than, and is not related to, the well-known exotic Cabbage White butterfly (*Pieris rapae*), which has different wing markings and a different flight pattern.

Within Queensland, individual specimens show slight variation in the extent and shape of the black marking on the forewings. The species has both summer and winter forms with the striated markings on the hindwing underside being darker in intensity in the winter form. Some individuals have underside markings intermediate between the summer and winter forms.

Adult flight is fairly weak. Males can be observed patrolling forest margins while the females frequent the areas where the host plants are growing. They fly in sunny weather and often in warm cloudy conditions. During extremely hot temperatures the adults rest on leaves in the forest understorey, often close to the ground. The males often display 'weak' hilltopping behaviour and patrol glades just below ridge summits. Both sexes are readily attracted to a wide range of small native and introduced flowers.

Wingspans for the pictured adult specimens are: males 37mm and females 38mm.

Elodina parthia (Striated Pearl-white)
Images left to right: male, female, male underside, female underside

An unusually marked female from near Musgrave, Cape York Peninsula North Queensland.

Ovipositing females flutter slowly around the host plants and settle, laying the eggs singly, chiefly on the upperside of fresh young leaves and shoots. The wings remain closed while ovipositing occurs. The small-leafed, low-growing Scrambling Caper (*Capparis sarmentosa*) is commonly used as a host plant in Southeast Queensland. *C. arborea, C. canescens* and *C. velutina* are also recorded as host plants for this species (Moss, 2010). Females will oviposit within centimetres of ground level if suitable fresh leaves are available.

Several day old egg

In December 2006, an egg was collected and raised through to an adult on *C. sarmentosa*. This egg was barrel shaped, approximately 0.6 mm wide x 1.0 mm high, with 13 vertical ribs and very fine horizontal lines between them. It was pale white when laid then later developed irregular pink markings.

The larva consumed the eggshell soon after hatching. It rested along the fine stems of the host plant and fed from the edges of soft, fresh leaves during daylight hours. The final instar larva was also observed feeding during the night. Similar to other species in the *Elodina* genus, the beautifully coloured larvae are very cryptic and can be difficult to locate on the

host plant. This larva attained a length of 22mm and I could only identify four instars as pictured (similar to *E. angulipennis,* see W. Jenkinson, 2010).

1st instar larva

2nd instar larva

3rd instar larva

4th instar larva

Pre pupa

Pupa

In captivity the pupa, measuring 14mm in length, was located below a stem of the host plant. It was attached with silk by the cremaster and a central girdle (similarly described by W. Rainbow, 1907).

Larval duration was 15 days while pupal duration was 9 days.

Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have records of adults from July through to March. The adults appear to be more numerous during spring, late summer and early autumn. However, this may relate to the timing of local rainfall triggering fresh growth of the host plants.

Photos Wesley Jenkinson

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Observations of moth and parasitoid – *Ron May*

Brithys crini (Fab.) (Lepidoptera : Noctuidae) with the parasites *Compsilura concinnata* (Meigen) and *Winthemia sumathana* (Townsend) (Diptera : Tachinidae)

Australia has 140 families of moths (Zborowski & Edwards, 2007). Many of these are pests. One Lepidoptera which can destroy plants within the Amaryllidaceae family is the lily borer, *Brithys crini*.

In March 2011, when observing damaged plants of *Hymenocallis littoralis* (Spider Lily) (Fig. 1), larvae of *B. crini* were photographed in situ (Fig. 2). Six of these larvae and a section of the host plant were placed into a container, with approximately 5cm of soil, for pupation to take place. Figure 3a shows a pupa of *B. crini*. After 18 days one imago of *B. crini* emerged and was photographed (Fig. 3b). The other five failed to mature as adults.

Fig. 1. Damaged Spider Lily **Fig. 2.** *Brithys crini* larva
Fig. 3a. *B. crini* pupa **Fig. 3b.** *B. crini* adult

In April 2011, I collected three *B. crini* pupae from soil at the site of the damaged *H. littoralis*. These were then placed into a container with soil taken from that location. After some time had elapsed, two large tachinid flies emerged from their subterranean pupae, and were captured and photographed (Fig. 4). Days later four small tachinid flies appeared at the soil surface (Fig. 5).

It was evident, by examining the three *B. crini* exoskeletons and observing the tachnids that had emerged from the soil, that those flies had achieved 100% in parasitizing the three *B. crini.*

Fig. 4. *Winthemia sumatrana*
Fig. 5. *Compsilura concinnata*

In June 2011 the flies were sent to Bryan Cantrell for identification. Bryan advised me that the large tachinid was *Winthemia sumatrana* (Townsend) with the smaller specimen being *Compsilura concinnata* (Meigen).

Winthemia sumatrana females lay their eggs on the outside of a host. The fly larva then chews its way through the host's cuticle.

Compsilura concinnata females have a piercing ovipositor with which they insert their eggs directly into the host (B. Cantrell pers. comm.).

Over 500 species of Tachinidae have been recorded in Australia (Colless, 1991) with limited use as biological control agents. It would be fair to say that in nature, these flies would play an important roll in controlling insects in orders such as Lepidoptera, Coleoptera, and Hemiptera, and possibly others.

Acknowledgements
Special thanks to Bryan Cantrell for identifying the flies and sharing his vast knowledge of Tachinidae. Thanks also to Christine Lambkin from the Queensland Museum for her advice.

Photos Ron May

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Secrets of a Predatory butterfly – *Liphyra brassolis* exposed! – *Densey Clyne*

Some years ago cinematographer Jim Frazier and I were asked to film an Australian wildlife sequence for David Attenborough's documentary series called "Trials of Life". We could choose our subject and as this would be the first sequence to be filmed it must set a high standard for the rest of the series. We chose the remarkable story of a carnivorous butterfly caterpillar that invades ant nests and feeds on their larvae. The actual feeding had not before been fully documented so our aim was not only to produce great new footage but also to confirm what had already been assumed.

On location in North Queensland we had some "trials" of our own what with aggressive ants and an elusive caterpillar but happily ended up with some unique footage. Jim was assured he had indeed set the standard required and for me it was a chance to see and photograph my favourite ants and their encounters with an unlikely predator. What follows is based on the diary notes I sent later to the BBC producer in England. (Note: to avoid confusion I shall use the term 'caterpillar' for the butterfly and 'larva' for the ants.)

The ants

Oecophylla smaragdina virescens, the Green Tree ant, or Australian Weaver ant, will be familiar to those who know tropical Australia. These are the attractive little green-and-gold ants that live in trees, sewing leaves together to make their nests. Fierce predators, they don't sting but pinch with their mandibles and squirt acid into the wound from a nozzle at the tip of the abdomen. This is how they both catch their prey and defend themselves against enemies. But for one enemy this strategy simply doesn't work. It's an insect insectivore that has turned the tables on one of the fiercest of caterpillar foes.

The butterfly

Liphyra brassolis, the Moth butterfly, is a tropical Australian member of the Lycaenidae, a family well known for its associations with ants, usually one of mutual dependence. In this species the butterfly itself can't feed as it has no haustellum. It appears that in the small subfamily Liphyrinae some genera have a normal haustellum, others have a reduced one and in *Liphyra brassolis* it is completely atrophied. But of course the caterpillar does feed, and it was its extraordinary table manners that we were to record on film for the first time.

Liphyra brassolis ready for flight

The caterpillar

Even in appearance the caterpillar of *L. brassolis* is unique. Oval in shape, it is covered by a kind of carapace, a tough integument that curves protectively around and partly under the body. Flattened on top with a rim all around, the golden brown carapace looks for all the world like a well-cooked apple pie! It is totally impervious to attack by the ants. This is of prime importance because the caterpillar

Approaching ant nest

spends most of its life hidden inside the leaf nursery of its unwilling hostesses, feeding on the ant larvae.

The camera crew

Finding our subject was not going to be easy. No problem with the ants, but the caterpillars are rare and many nests would need to be opened and examined for them. The BBC had employed a local naturalist John Young to assist Jim Frazier as cameraman and myself as researcher and photographer. It was John with his astonishingly monkey-like climbing skills who cut down and examined the nests and as a result it was John who suffered the Torture of a Thousand Mandibles, with peeling fingers and polka dotted forearms! By the end of the shoot Jim also had his share of attacks when the ants used his camera as a highway to his nose and eyes. . .

On the job

Once on the ground each nest, now seething with thousands of angry ants, must be pulled apart. This takes time; the nests are often bigger than a football, with leaves and silk inside forming a maze of small chambers, including queen and brood nurseries. One day a whoop of joy goes up when two caterpillars are found deep inside two separate nests. Transferred to a fish tank together with ant workers and brood, they are closely monitored over several days. We find the ants don't interfere unduly with the caterpillars, and by the end of our second week of surveillance the caterpillars appear to be feeding on the ant larvae. But the view is from above and this is not certain.

Entering ant nest

On nest with protesting ants

Time is going by, and it's necessary to set up a system by which we can quickly start filming the action if and when it happens. This is not easy when feeding takes place out of sight under the caterpillar's carapace. But Jim's ingenuity comes into play. He sets up each of two caterpillars under an inverted petri dish on top of a glass plate that is suspended above a bench top. Below each petri dish a front-surfaced mirror is fixed at an angle, giving a clear view of the subjects and it is this mirror image that

Underside of caterpillar photographed through glass

will be filmed by Jim and photographed by me. Each caterpillar is given a supply of ant larvae with attendant minor and major worker ants, and we each set up an individual watch on our separate subjects.

At first the caterpillars don't oblige – they simply walk round and round on the glass plate, laying down silk as they go. But comes a day when by strange coincidence both our caterpillars start feeding. There is high excitement as both movie camera and still camera go into action. Feeding takes place several times during the next few days and while Jim's caterpillar performs and his camera rolls busily I am able to take my time watching and recording my caterpillar's activities and the reactions of the ants.

Caterpillar feeding on ant larvae

This is what we see. Moving close to a clump of larvae the caterpillar lifts the front of its carapace to investigate. Any larva close by is dragged under, the carapace lowered and the meal started. While feeding, the caterpillar holds its victim with its legs and appears to squeeze so that the larva bulges but the skin remains intact. The whole larva is consumed.

Meanwhile, what are the ant workers doing to protect their charges? The ant larvae stick together in clumps for easy handling and the workers continually try to drag them away to safety. Sometimes they lift clumps of them on to the caterpillar's back - surely the safest place - and ride around on it. Occasionally ants can be seen biting the rim of the caterpillar's carapace but there is no concerted effort to attack or damage it. And now the caterpillar's carapace fits snugly against the substrate so the ants have no further access to its victims. The predator is totally in charge.

But there is more to the story of this amazing butterfly. When the time comes to pupate it does so while still in the ants' nest. And, uniquely among

Pupa in ant nest

butterflies, it pupates inside its last larval skin. It retains the protective leathery armour as a *puparium* which it fastens down in the ants' nest with silk. When several of our captive caterpillars pupated in their cardboard containers there was little change at first then over several days the rather flat top of the carapace swelled up into a dome. This time it resembled a nicely browned loaf of bread rising in the oven!

Without knowing the exact period of pupation, we needed to film the emergence of the butterfly. Two pupae were set up on John's verandah with an ingenious alarm system devised by Jim in which the splitting puparium would complete a circuit and set off an alarm. Now began the tedious waiting period with everyone confined to home base, alerted to listen for that first buzz. To cut a long story short, the system worked, the alarm went off early one morning and there was a helter-skelter rush to the scene. It took only a few minutes to transfer the pupa to a viable ants' nest in the garden and set up lights. Jim had the camera rolling as the butterfly emerged from the puparium with a retinue of angry ants.

Newly emerged butterfly

Defensive scales on abdomen

Butterfly shedding protective scales

Emergence inside an ants' nest might seem pretty dangerous for a soft- bodied butterfly. Surely it would be attacked by a host of infuriated ants? But this butterfly has two surprising defences. Its abdomen is clothed with a mass of wiry black scales, and its wings and legs with slippery white scales. Ants that attack its wings immediately toboggan off. Ants attempting to bite its body find their mandibles so entangled they lose interest in the butterfly. As our camera rolls the butterfly slowly walks to the top of the ants' nest shedding scales and hairs as its wings expand. And there in a natural situation it would wait

Ant with butterfly scales clogging mandibles

for some time before taking off, to mate and lay its eggs, probably close to a mature ants' nest.

Filming finished, it all goes off to the lab. After several days and much nail-biting the processed workprint returns and yes! it's all there. I'm able to send a positive report back to the BBC in England. We have confirmed what has only been conjectured - that the caterpillar of the Australian butterfly *Liphyra brassolis* does indeed prey on the larvae of the Australian ant *Oecophylla smaragdina virescens.*

Story and photos by Densey Clyne©

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The Genus Grammodes (Lepidoptera: Noctuidae; Catocalinae) -

Peter Hendry

The genus *Grammodes* Guenée, 1852, belongs to the subfamily Catocalinae (Lepidoptera: Noctuidae). Worldwide the Catocalinae include about 10,000 species, a figure approaching half the total number of Noctuidae (Scoble 1992). Most Catocalinae have broad wings and upturned labial palpi (Scoble 1992). In many, the tibiae are spined and a hairpencil occurs on the midtibia (Scoble 1992). The larvae are semiloopers, with one or more pairs of prolegs reduced (Scoble 1992). Often, the pupa has a whitish bloom (Scoble 1992). Worldwide the genus Grammodes contains about 55 species.

In Australia the Catocalinae contain about 370 species. The genus Grammodes has 11 named Australian species with at least one undescribed species, several of which also occur overseas. Within the genus there are similar looking as well as similarly named species. Those with similar names are *G. ocellata*, *G. occulta*, *G. oculata* and *G. oculicola*. Hypothetically the genus can be broken into two groups based on the pattern of the forewing. I have done this just to group together those similar looking species some of which, to me, are impossible to tell apart and would require dissection to do so. In the first group (A) I have placed those with two whitish or cream forewing bands running square off the costa (upper margin) to the dorsum (inner margin) and /or the termen (outer margin). Several of this group have a small ocellus (eye spot) between the bands at the tornus (lower forewing angle). The members of this group are *G. diagarmma* (Lower, 1903), *G. justa* Walker, 1858, *G. ocellata* Tepper, 1890, *G. oculata* Snellen, 1880, *G. oculicola* Walker, 1858, *G. pulcherrima* T.P. Lucas, 1892 and *G.* sp. (undescribed). In the other group (B) I have placed those with two whitish or cream bands, the outer of which is always thinner, running more or less parallel to the termen and do not reach the costa. None of this group has an ocellus. The members of this group are *G. comma* Swinhoe, 1900, *G. geometrica* (Fabricius, 1775), *G. occulta* Berio, 1956, *G. quaesita* Swinhoe, 1901 and *G.stolida* (Fabricius, 1775).

Group (A) *G. diagarmma* (Fig. 1) differs from other members of the group in having very fine bands, a much less uniform background and without an ocellus. It is known to occur in WA and Qld. *G. justa* (Fig. 2) has a uniformly dark background to the bands and no ocellus. It occurs in the north of the NT and from Thursday Island, Qld to central NSW (Common 1990). *G. ocellata* (Fig. 3) has a uniformly dark background to the bands and has the largest ocellus of all. The larger and more rounded ocellus is a distinguishing feature. It ranges widely in northern Australia, including inland localities and in the east as far south as central NSW (Common 1990). The larvae feed on *Phyllanthus maderaspatanus* (Euphorbiaceae) (Common 1990). *G. oculata* (Fig. 4) is similar to *G. ocellata* but has a smaller ocellus and a brownish suffusion running part way up the inner band from the inner margin. It occurs throughout the northern half of Australia including WA, the NT and Qld and as far south as central NSW. *G. oculicola* (Fig. 5) is very similar to *G.oculata*. There is a narrow band close to and for almost the length of the termen on *G. oculata*, which may be less clear or missing in *G. oculicola*. However this may not be a diagnostic feature and dissection is probably required to separate the two species. *G. oculicola* occurs in the northern half of Australia including SA but may not be present in WA. *G. pulcherrima* (Fig. 6) also has an ocellus and is easily distinguished from the others by having a short whitish line running from the costa, between the outer band and the apex. The outer band is more irregular than others of the group. It has a general distribution in WA north from the Fortescue River, in the NT north from Alice Springs, in Qld and the northern half of NSW (Common 1990). *G.* sp (Fig. 7) is similar to *G. justa* but the outer band is curved and it has a black spot towards the bottom of the forewing, halfway between the outer band and the termen.

Fig. 1. *Grammodes diagarmma*

Fig. 2. *Grammodes justa*

Fig. 3. *Grammodes ocellata*

Fig. 4. *Grammodes oculata*

Fig. 5. *Grammodes oculicola*

Fig. 6. *Grammodes pulcherrima*

GROUP (B) *G. comma* (Fig. 8) as with other members of this group, it has a black-brown band between the two whitish or cream bands and another black-brown band on the inside of the inner whitish or cream band. In *G. comma* this inner black-brown band is more uniform in width and less triangular in shape than other members of the group. *G. comma* has a similar distribution to *G. justa* [Group (A) above] (Common 1990), *G. justa* is the one I find most commonly at light traps, however *G. comma* still eludes me. *G. geometrica* (not figured) is extremely close to *G. occulta* and would require dissection to separate. It occurs in Qld. *G. occulta* (Fig. 9) also occurs in Qld and possibly NSW. *G. quaesita* (Fig. 10) differs from *G. geometrica* and *G. occulta* in having the outer whitish band convex outwards. It occurs in northern Australia including WA, the NT and Qld. *G. stolida* (not figured) is similar to *G. quaesita*. It differs by having a return inwards half way down the outer whitish band and a distinctive white spot in the lower part of the hind wing. *G. stolida* is found in WA.

Fig. 7. *Grammodes* sp.

Fig. 8. *Grammodes comma*

Fig. 9. *Grammodes occulta*

Fig. 10. *Grammodes quaesita*

Photos Peter Hendry

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From a Wetland Garden – *Amanda Johnston*

I first became interested in butterflies and other insects when I was given a microscope for my 10th birthday. We had a vine in our back yard which brought in lots of Blue Triangle butterflies (*Graphium sarpedon*) and bees, so off I went collecting my samples for my slides. The magnification that the microscope brought into view was a new world for me. I enjoyed looking at their colours and

Chequered Swallowtail
(*Papilio demoleus sthenelus*)

patterns, each creature being unique.

When I shifted into the wetlands as an adult, I found I had a need to plant plants to bring creatures into my world, so off I went collecting plants. *Melaleuca bracteata* (Black Tea Tree) is great for attracting bugs, beetles and butterflies.

One day I noticed lots of Chequered Swallowtails (*Papilio demoleus sthenelus*) in my paddock and under my nose was the host plant Emu Foot (*Cullen tenax*). As I explored the creek edge I found the native vine *Cayratia* growing wild which brought the Joseph's Coat Moth (*Agarista agricola*) and caterpillars. How exciting for me to be part of this ecosystem!

Joseph's Coat Moth (*Agarista agricola*)

These days I take photos and not samples. I have a Voluntary Conservation area and Land for Wildlife spot, which I play with, watching and waiting with a keen eye for a new creature to arrive. It is so exciting! Planting host plants and getting more information has been a great help thanks to the Butterfly and Other Invertebrates Club. I hope this has inspired anyone who may be thinking of joining or being part of this plan for conservation to help our little creatures. Happy snapping and planting.

Photos Amanda Johnston

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Observations of the jumping spider *Lycidas* sp. breeding in *Lomandra hystrix* – *Robert Whyte*

Fig. 1. *Lycidas* sp. on a fruit cluster of *Lomandra hystrix*

Fig. 2. Maternal retreat of female *Lycidas* sp. on fruiting cluster of *Lomandra hystrix*

While gathering *Lomandra hystrix* fruit, I noticed some small spiders (Fig. 1) and several silken retreats in amongst the fruit clusters. The retreats were about 10mm x 7mm, with quite firm silk, nestled within the fruit clusters against the main stem of the plant, an example of which is shown in Figure 2.

Fig. 3. Female *Lycidas* sp. collected from a retreat on *Lomandra hystrix*

Fig. 4. Opened maternal retreat of *Lycidas* sp., showing cluster of eggs

I investigated several of these silken retreats. Most of them contained an adult female jumping spider, *Lycidas* sp. (Fig. 3). Some also contained a mass of about 30 greenish eggs (Fig. 4) about 0.4mm in diameter. Some contained just-hatched spiderlings. In one case a sub-adult female was in a retreat with no eggs, suggesting the females make their retreats as a safe haven even before their final moult.

Fig. 5. Female adult *Lycidas* sp. amongst the fruit and spines of *Lomandra hystrix*

Fig. 6. Possible *Lycidas* sp. male

Lomandra fruit clusters seem reasonable locations for a jumping spider's egg sacs as they are dense and protected with long spines — *hystrix* means sharp or spiny (Fig. 5). These spiders may also use similar plants elsewhere as protective homes for their retreats.

The missing male

So far I have not found a male of this species in amongst the *Lomandra*, despite the presence of sub-adult females. In fact I have not definitively identified a male of this species at all. We know they exist, because this appears to be a very common spider, and spiders need daddies too. There are a number of contenders, one of which is possibly the tiny male shown in Figure 6 posing on the eraser of a pencil. This specimen is almost indistinguishable from some *Hypoblemum* spp. also common around South East Queensland.

Diagnostic drawings in the key to Salticids made by Val Davies and Marek Zabka in 1989, published in the Memoirs of the Queensland Museum (Fig. 7) shows us the male of their *Lycidas* sp. being quite small compared to the female, with a white mask on the rear of the caput, or top part of the carapace, some sclerotised or hardened sections of the upper part of the abdomen, and a faint white T-mark down to the spinnerets.

My photographs of an unidentified male, possibly of the same species, suggests there are white wrist bands on the pedipalps, below which are dark-brown to black palpal organs, a fringe of white hairs on the leading edge of the abdomen, and rather blocky legs with alternating dark and light hairs.

The mystery of the males, not only in this species but many others, will surely be unraveled here in Australia over coming years. With excellent observations and documentation made by naturalists with increasingly more powerful and better quality digital cameras we will gather the evidence we need, showing males and females mating. This is about as reliable as it gets, in terms of evidence. We must be certain, though that we are not seeing a hostile encounter instead.

Over the coming years, one project compiling evidence will be http://www.arachne.org.au — a web site draft of a future field guide to Arachnids of Australia. Any observations of arachnids made by members of BOIC and other organizations will be most gratefully received, as we piece together the many fascinating stories describing our natural world.

Photos Robert Whyte

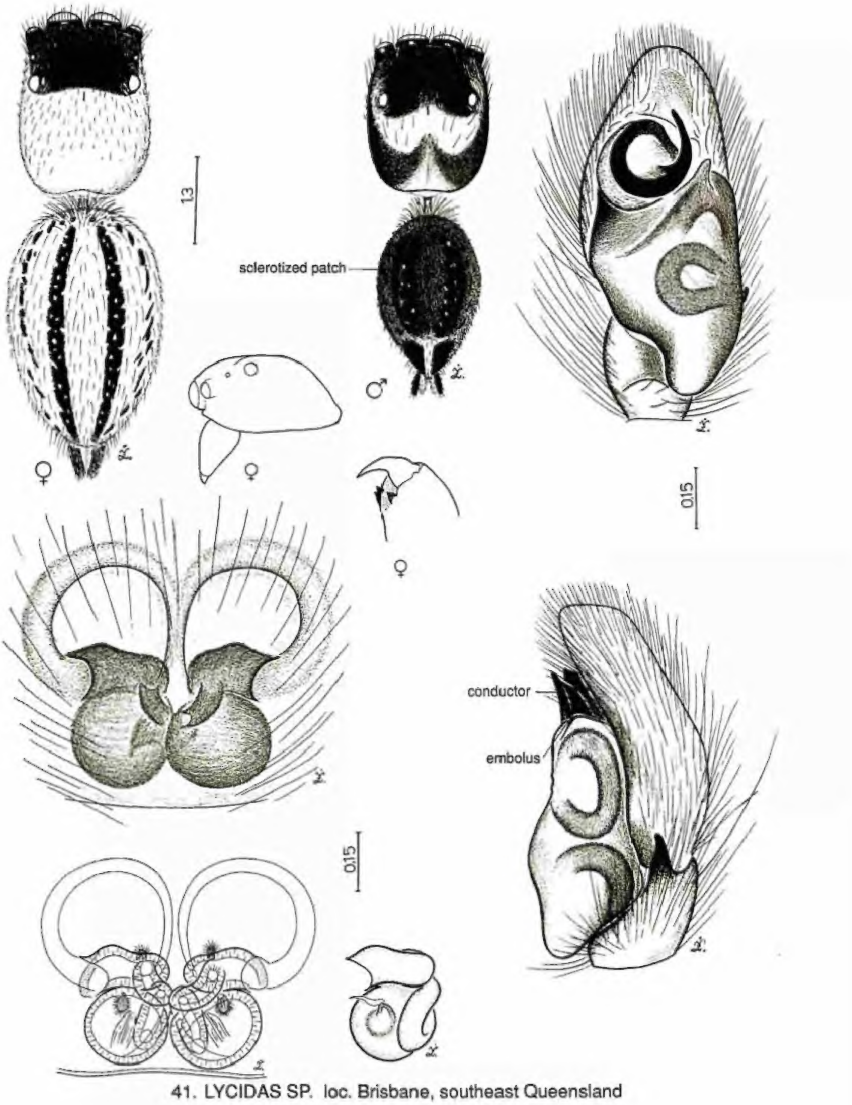

Fig. 7. Diagnostic drawings of *Lycidas* sp., Davies, V. Todd and Zabka, M. 1989 Illustrated keys to the genera of jumping spiders (Araneae : Salticidae) in Australia. Memoirs of the Queensland Museum 27(2): 189-266. Brisbane. ISSN 0079-8835

A new host plant for the Black or Common Jezebel butterfly (*Delias nigrina*) - *Ross Kendall*

On May 18th 2011, I watched a female *Delias nigrina* lay a cluster of eggs on a fresh leaf of the Long-flowered Mistletoe (*Dendrophthoe vitellina*) parasitising Crepe Myrtle (*Lagerstroemia indica*) in my garden at Indooroopilly. Knowing that members of our local possum population systematically eat most of the leaves of the mistletoes in winter and that, as the sap flow of the Crepe Myrtle slows, so too does growth of the mistletoe, I collected the eggs.

After the caterpillars hatched, I initially fed them on leaves of the Bronze or Box Mistletoe (*Amyema miquelii*) which is reasonably common in this area but then decided to try them on the Alphitonia Mistletoe (*Amyema conspicua*).

Foliage of *Amyema conspicua*

Egg cluster of *Delias nigrina*

A. conspicua which is often found on Crepe Myrtle in suburban areas also suffers from limited sap flow in winter. I have two healthy plants of this mistletoe parasitising a Red Ash (*Alphitonia excelsa*) growing in my large shade house. Unlike the Crepe Myrtle, Red Ash continues to grow in winter as do the mistletoes.

Larvae of *Delias nigrina*

Pupae of *D. nigrina*

Adult *D. nigrina*

The Jezebel larvae readily adapted to this new food and subsequently pupated. Some adults that emerged were released into the shade house in late July and soon there were several clusters of fresh eggs on the *A. conspicua*. Initially, I had thought that we could only say that this butterfly is now known to use the mistletoe as a host in captivity.

Soon after that, in speaking with Trevor Lambkin, I learned that he had observed *D. nigrina* completing their life cycle "in the wild" on *A. conspicua* parasitising Red Ash at the old DPI site at Long Pocket, Indooroopilly. Then Richard Zietek told me of a similar experience at Graceville over at least three seasons!

So we have a new host plant record as it is not mentioned in Braby (2000) or Moss (2010).

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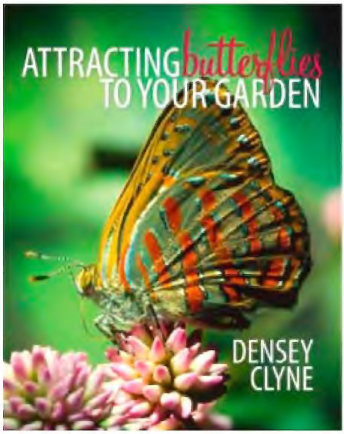
BOOK REVIEWS



Attracting Butterflies to Your Garden (2nd Edition), by Densey Clyne, published by New Holland Publishers, 2011 (first published in 1990) RRP $24.95 – Reviewed by *Alisha Steward*

There are several books about 'butterfly gardening' on the market at the moment. I thought about this when I looked at Densey's book for the first time. However, I see that it was first published back in 1990 – Densey was certainly ahead of her time!

In classic-Densey Clyne style, the book is populated by stunning, mostly full-page, colour photographs. The butterflies, gorgeous as they are, haven't all reproduced in print as well as expected, unfortunately (most readers probably won't notice this at all). I assume that the lack of 'crispness' in a few photographs is a side-effect of zooming in on the butterflies so that they fill the entire page. This doesn't detract from their beauty, however. Not only do the photographs showcase colourful butterflies – the butterflies are often coupled with brightly-coloured flowers, making the images extra dazzling!

The book, at 112 pages, is logically divided into butterfly families, with an introduction to the book at the start, and a list of butterfly food plants at the end. The introduction targets young and old readers alike, and provides facts about butterfly larvae and adults that readers may not have realised – for example, statements such as 'A butterfly doesn't grow.' It also informs the reader that there are "two mouths to feed', i.e. the larvae that feed on plants, and the adults that require nectar. Readers

are also encouraged to become 'butterfly farmers'. Densey recommends a number of garden flowers to attract butterflies, but unfortunately most of those are exotic, including cultivars of *Lantana* – any butterfly observer will know how much butterflies love visiting *Lantana* flowers in the wild, though! This suggests that the book is written for suburban gardeners who may know little about native plants and who want to maintain their traditional or cottage gardens, attracting butterflies with plants that they are familiar with.

Each butterfly family is introduced with one page of text, followed by a number of pages on selected species from the family. The photographs of each butterfly species are displayed alongside the informative text, which covers exotic and native larval food plants, and butterfly stages - larva, pupa and adult. Details about the eggs are provided for some, but not all species. Most pages include photographs of larva, pupa, and adults. However, photographs of larvae or pupae for some common species have been omitted. Distribution maps of each species are also provided.

The skipper-fanciers amongst us will be disappointed – only two species make it into this book. Don't expect to see a variety of images of these skippers, either – the same photographs of the two species are repeated on earlier pages, with the orientation of the photographs rotated. I think a variety of extra photographs could have been used in general, to provide more information.

Some of the common names of butterflies in this book are different to the names you may be familiar with – for example, 'Large Citrus Butterfly' is used in the book to describe the species also commonly referred to as the 'Orchard Swallowtail'. The species name is given, however, so any differences in common names should be ignored.

The list of butterfly food plants at the end of the book is unusual in that both species names and common names are listed together as separate entries. The list would be a useful reference for people who are only familiar with the species name of a plant, or only familiar with the common name. Plant species names and common names are also given in the text against each butterfly species. The list of food plants is not comprehensive, and as Densey points out, only the better-known species are listed. This makes sense – as there are entire books devoted to butterfly food plants, and the list would cover many, many pages!

A nice surprise reveals itself at the end of the book, which wasn't mentioned on the contents page – a series of close-up images of butterfly wings!

Yet again, this is another of Densey's wonderful books with humorous and quirky text, with such gems as "Forget about fun in the foliage – before a caterpillar's mind can turn even remotely to thoughts of love its body weight must increase several thousandfold." She personifies the caterpillars and adult butterflies by providing an idea of what they might be thinking. And for the foodies out there: "If a caterpillar

has a taste for Milkweed Ragout you'll never tempt it with Camphor Laurel Bonne Femme"! This book has something for everyone!

'Attracting butterflies to your garden' is an informative and entertaining read, relevant to gardeners throughout Australia. Although native butterfly food plants are included, exotic ones are too. I found the book to be written in a way which encourages 'everyday' gardeners to attract butterflies - such gardeners may not be knowledgeable on native butterfly food plants and may not have them growing in their gardens or know where to source them. These gardeners can find joy in using their existing garden species to feed butterflies, as well as considering native alternatives to plant in future. The book also creates an awareness of the needs of the larvae, as well as the adults. A common misconception is that butterfly caterpillars voraciously devour our vegetables, flowers, and foliage – let's hope that this book can encourage gardeners to tolerate butterfly caterpillars!

Ed. Note: The book is available from the BOIC for a member's price of $22 plus P&H.

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Moths of Victoria part 3 – *Peter Hendry*

Moths of Victoria part 3 is the third instalment by Peter Marriott in an attempt to illustrate all the moth lepidoptera of Victoria. Published by the Entomological Society of Victoria, the editorial team includes Ted Edwards, Axel Kallies and Marilyn Hewish. It is a thirty six page booklet and includes a CD containing another 300 plus pages.

This volume covers two subfamilies of the Geometroidea, being a super-family containing the one family, Geometridae. The subfamilies covered are Sterrhinae known as "Waves" and Larentiinae known as "Carpets".

The booklet is well set out; the introduction is followed by a description of what is in the book and what is on the CD. This is followed by a few images of all 5 subfamilies represented in Victoria then onto the Waves. Here a general description of the subfamily is given, followed by images of set specimens of all the Victorian Sterrhinae. The Carpets follow the same format. Throughout the booklet are images of live specimens including one larva. The last page contains the acknowledgements. The CD contains 1 to 3 pages, in pdf format, of each species and includes a few species suspected, but not yet recorded from Victoria. Images of both male and female specimens are shown for nearly all species represented and a few species have their full life-cycle imaged. Information on their Victorian and Australian distribution

is given along with flight times in Victoria, where known. Where species are known to vary greatly several examples are shown. Identification tips are given for those hard to sort out species.

The CD also contains a Victorian checklist for each subfamily. The subfamily Sterrhinae is represented by 19 named and 6 unnamed species in 5 genera. This represents about 26% of the Australian genera and 14% of the named Australian species. The subfamily Larentiinae is represented by 130 named and 17 unnamed species in 24 genera. This represents 50% of the Australian genera and about 48% of the named Australian species.

Other files on the CD are three wonderful posters of moths from parts 1, 2 and 3; an index for parts 1 to 3 in both pdf and excel format; two pages about type specimens including an original description; an order form and flyer. Updates are also included for parts 1 and 2.

As the flyer says "this is an essential resource for anyone seeking to identify the moths around their home and countryside".

While the orientation is Victoria and several species shown have only been recorded from that state a few are recorded Australia wide and at least 28 are recorded from Queensland. All in all a great effort and I look forward to the next instalment (Part 4) which is due out by the end of the year. For further information or to order, contact Ian Endersby, 56 Looker Road, Montmorency, Vic 3094 or email vicmoth@entsocvic.org.au

REPORTS

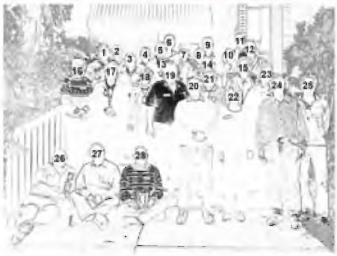
5th Biannual Moth Conference - *Peter Hendry*

On the weekend of the 16-17 July 2011, I had the pleasure of attending the 5th biannual moth conference. The conference was held in Canberra in the CSIRO Ecosystem Sciences building, which houses the Australian National Insect Collection. I spent Saturday morning searching through the collection trying to identify various moths in my collection from photos I had taken with me. Saturday afternoon saw several speakers give mini lectures on diverse subjects such as: 1. The effects of fire, on native flora and fauna, caused from burning exotic grasses (which burn hotter than native grasses). 2. Using geo-spatial science, (mapping and GPS) to predict the danger of ships importing pest species, based on the ports they have visited and the closeness of vegetation to the ports.

I spent most of Sunday with Marianne Horak, learning the fine art of dissection and again searched the collection trying to put names to moths. Throughout the weekend it was great to talk to and ask questions of fellow enthusiasts, many of whom I had

previously only known from reading their various published books and articles. For any moth enthusiast the weekend is a must. Roll on 2013!
Photo You Ning Su

5th ANIC Moth meeting 16-17 July 2011



1 Nielsen, John
2 Rentz, David
3 Williams, Andy
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8 Willan, Len
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11 Britton, David
12 Tuttle, Jim
13 Hewish, Marilyn
14 Morgan, Julie
15 Hendry, Peter
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17 Knowles, David
18 Horak, Marianne
19 Owen, Graham
20 McQuillan, Peter
21 Marriott, Peter
22 Young, Cathy
23 Hilton, Doug
24 Douglas, Fabian
25 Su, You Ning
26 Young, Andy
27 Edwards, Ted
28 Sundholm, Allen

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2011 Australasian Invertebrates Conference – *Skye Blackburn*

After the great success of the first Australasian Butterfly Breeders and Enthusiasts Conference, which was held in Sydney in 2009, this year the conference was expanded to include other invertebrates as well. The 2011 Australasian Invertebrates Conference was held in Melbourne in late June and consisted of two days hosted by the Melbourne Zoo followed by two days at the Melbourne Museum. The conference

attracted over 40 attendees who were lucky enough to experience a combination of 30 different topics, workshops and behind the scenes tours over the four days.

Kris Messenger with a Lord Howe Island Stick Insect

The first two days of the conference focused on butterflies and with the beautiful Melbourne Zoo butterfly house on site the attendees could not be happier. The quality of speakers was very high this year with topics including "Butterflies and Communication", "Keeping Tropical Butterflies in a Temperate Climate", a video tour of the London Zoo, a butterfly mounting workshop, a fantastic Q&A time with the invertebrate keepers at the Melbourne Zoo along with several behind the scenes tours of their amazing facilities. The highlight for many attendees was getting to ask experienced invertebrate keepers questions about the mechanics as well as operational procedures involved with the butterfly house. The staff members were also happy to show us their breeding facility for the Lord Howe Island Stick Insect and to explain what makes it so successful.

A change of venues was organised for the second portion of the conference and we all headed off to the Melbourne Museum for some excellent speakers from the wonderful world of invertebrates. The topics were quite varied and included "Macro Photography for Invertebrates", "Benefits of Record Keeping for Invertebrates", "Lord Howe Island Stick Insects" as well as "Invertebrate Medicine". An invertebrate mounting workshop was also kindly organised by museum staff as was as a behind the scenes tour of the Bugs Alive and other excellent live exhibits at the Museum. The highlight of our time at the Museum was this tour of their live exhibits unit and learning how their staff members manage to successfully breed such a wide variety of animals to maintain the live exhibits within the Museum.

Caterpillar enclosures at the Melbourne Zoo

The 2011 Australasian Invertebrates conference was a great success and we hope that it continues to grow when we all meet again in 2013. The conference was a great opportunity to meet people with similar interests and help expand our pool of

knowledge about invertebrate keeping and research in Australia. I would like to also take this opportunity to thank Patrick Honan from the Melbourne Museum, who made an amazing contribution of his time and energy to help me organise this fantastic event. A DVD of the conference, which includes many of the speakers, will soon be available for purchase. You are welcome to contact me for details.

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Stick Insects on Tour - *Janine Kimber*

Nathan is 15 years old and has been a BOIC member for over a year. He breeds Stick Insects – Spiny Leaf, Goliath and Tesselated - and has a nearly completed butterfly house in which he plans to breed a range of butterflies when the weather warms up (if his Mum doesn't slow down on construction!). Nathan is 'spreading the word' on butterflies and invertebrates.

Earlier this year, as a favour to a former teacher, Nathan gave a talk on Stick Insects to Year 4's at Toowong State Primary School, to complement their 'minibeasts' studies. In June, Nathan and his Mum travelled to a Caboolture Child Care Centre to share his stick insect knowledge with about 20 VERY excited, inquisitive and noisy 3 year olds. A teacher from the centre saw Nathan's stick insects on display at the Butterfly Plants for Poverty launch and contacted Daphne to see if someone could come to the centre to talk to the children about them.

So Nathan, with his Mum as taxi, moral support and 'crowd control', took a cage full of Spiny Leaf stick insects to show the children. Nathan also made laminated charts showing the life cycles of the stick insect and a butterfly, using his own photographs. His mum read "The Very Hungry Caterpillar", by Eric Carle – a children's book about the life cycle of a butterfly. There were lots of "oohs", "aahs" and squeals of delight (and terror!) but the children loved it. Each of the children also had their photo taken with a stick insect. At Daphne's suggestion, Nathan presented the class with a BOIC butterfly poster. The teacher spoke so highly of the presentation that the Principal suggested it should become an annual visit.

Word travels fast and a couple of weeks later, via another contact, Nathan received a request to give a presentation to a Yr. 1 class at Jindalee State Primary School. The students had studied life cycles of butterflies and keep a Children's Stick Insect as a class pet, so this presentation was at a more advanced level. Nathan took his Spiny Leaf Insects and a small Goliath (donated by Lois). The class was fantastic – attentive, asking lots of questions and most of them bravely holding a stick insect to have their photo taken. They were quite nervous about the spikes on the Spinies! As a special surprise, Nathan showed a movie he made of a hatching Common Crow caterpillar. He used a microscope connected to his computer to record a VERY

close-up view of the tiny black headed caterpillar emerging and then eating its egg casing. The children were enthralled! Nathan gave the class a BOIC butterfly poster which is proudly displayed on the classroom wall.

Things are a bit slow 'insect-wise' at the moment, but no doubt when the weather warms up, Nathan will be back on the road sharing his knowledge and enthusiasm with more children.

In a Corinda Garden

A Miscellany of Invertebrates - *Murdoch De Baar*

I have selected a series of six pictures for this article, taken in my Corinda garden.

The first is a lacewing (Neuroptera: Ascalaphidae, Fig. 1). If the reader examines the antennae of this lacewing, the addage "don't get your knickers in a knot" may well apply to insects also.

Gasteruptiid wasps are parasites of the eggs and larvae of bees and other wasps. This wasp looks like something from an "Aliens" movie (Fig. 2).

Fig. 1. A "lacewing or knot" … with an antennal knot.

Fig. 2. Parasitic wasp, *Gasteruption* sp., Gasteruptiidae

The Blue-black wasp *Scolia sorror* F. Smith, Scoliidae (Fig. 3) is a parasite (as a larva) of the larvae of large scarab larvae (Scarabaeidae) found in the soil. The female wasp must dig into the soil to find a host.

A scarab beetle, *Phyllotocus* sp. (Scarabaeidae: Melolonthinae) has been captured by a robber fly *?Neoaratus* sp. (Diptera: Asilidae, Fig. 4).

Fig. 3. Blue-black wasp, *Scolia sorror*, Scoliidae

Fig. 4. Robber fly, *?Neoaratus* sp., Asilidae and prey

The Green scarab, *Diphucephala* sp. (Scarabaeidae: Melolonthinae) shown in Fig. 5 also becomes a victim of the same species of Robberfly illustrated in Fig. 4.

We all know the web of Saint Andrews Cross spider *Argiope* sp., Argiopidae, but surely this can't be a male (Fig. 6). One would think he's messed up his instructions.

Fig. 5. Green scarab, *Diphucephala* sp.. Scarabaeidae: Melolonthinae

Fig. 6. St. Andrew's Cross spider – male, *Argiope* sp., Argiopidae

Photos Murdoch de Baar

YOU ASKED

Q. In the high winds recently, some branches of an *Acacia fimbriata* growing in our back yard in Camp Hill broke off. On closer inspection, there were clear signs that something had "ring-barked" the branches. It seemed like longicorn beetles may have

been at work. I found two invertebrates that I assume to be larvae. But of what? I have not been able to identify them. Can any members help me? I have attached some photos.
Thank you **Linda Sulakatku**

A. I can't find a definite common name but feel comfortable with Giant Coccid or Giant Mealybug (Family Margarodidae). Adult female Coccoidea are sedentary, attached to host plants by their mouthparts, wingless, often legless, and look like larvae with the head and thorax fused and abdominal segments poorly defined. The females protect themselves from drying out by having a very thick exoskeleton, covering themselves with wax or scales, or instigating the host plant to form a gall around them. The adult males are fragile, short lived, have no mouthparts, tail filaments, and only one pair of wings with the hind wings reduced to hamulohalteres. The crawlers, first instar nymphs, have well developed legs and antennae making them highly mobile, even dispersed by wind.
Monophlebulus are found on eucalypts and are restricted to Australia. These scale insects belong to the Family Margarodidae that has 40 Australian species. Adult females often do not have mouthparts.
Shona Hocknull, Information Officer (Queensland Museum)

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Q. Here is a photo of an interesting invertebrate on a rock at Bahrs Hill in the dry rainforest. Do you have any idea what it is? **Glenn Leiper**

A. I'm pretty sure your critter is a native "Pill Bug", an isopod in the suborder Oniscidea which contains most of the terrestrial crustaceans such as our exotic garden slaters and woodlice. They tend to have their bodies flattened dorso-ventrally compared to sandfleas or beach hoppers which are amphipods and have their bodies flattened side to side.
You would have had difficulty in trying to dislodge it from the rock due to its smooth profile and tight adherence. Once dislodged it can roll itself into a tiny tight perfect ball (thus the name "pill bug") resembling a miniature armadillo!

We published an article in Metamorphosis on a related semi-marine species of oniscidean, *Ligia exotica* (the "Wharf Louse"!), in December 2008 (issue No 51) and, much earlier, in September 1999 (Newsletter No 14) an article by Glen Ingram on "Why Slaters are Good for You"!
Information on these organisms is hard to find in both the popular and scientific literature although I found co-authors Diana Jones & Gary Morgan's "A Field Guide to Crustaceans of Australian Waters" quite useful (this is a 2002 Western Australian Museum publication). **John Moss**

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I received the following email from Ross Kendall on the 11th July 2011: "We had a relaxing few days out at Thane Creek (Warwick) last week before the chill set in. We spotted a looper caterpillar about 40 mm long on a eucalypt. I have attached a couple of images (Fig. 1). Any suggestions?"
My reply was as follows: "I think it is the larva of the moth known as the Red Lined Geometrid (*Crypsiphona ocultaria*). I have never noticed the split in the head area looking like feelers, visible in Fig. 2." I also pointed Ross to Don Herbison-Evans' web page, which illustrates the moth. Seehttp://lepidoptera.butterflyhouse.com.au/geom/ocult.html

Fig. 1

Fig. 2

Ross replied that the moth looked familiar and that it had flown into the lights at night at Thane Creek. On 3rd August 2011 Ross sent a further email saying, "I think we have it. The moth has a wing span of about 30mm." He forwarded the accompanying adult images, Figs 3 and 4.

Fig. 3

Fig. 4

It was indeed the Red Lined Geometrid, a fairly common moth, which I have had come to light on many occasions in several different areas. It is such a great help, with identification, if the larva can be bred through to adulthood. Trying to identify moth species from adults can be difficult enough but with so little known about the life cycle of many of our moth fauna, identifying their larvae can be even harder. Who is to say there is not an unknown similar looking larva from a different species?
Peter Hendry

Photos Ross Kendall

What Katydid Is This revisited – *Ross Kendall*

On page 33 of the last edition of our magazine, we illustrated a Katydid and were unsure of its actual species name.

One of our members, Russel Denton has suggested that the Katydid is the Gum Leaf Katydid (*Torbia viridissima*). There are a series of great images to be found on Peter Chew's website at http://www.brisbaneinsects.com/brisbane_grasshoppers/simplex.htm

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Who Lives Here in south west WA? – *Margaret Greenway*

This turreted burrow is the home of the trapdoor Palisade Spider *Neohomogona stirlingi* Main (Family: Idiopidae). I came across a 'colony' of these unusual burrows ,in all sizes, in the middle of the walking track half way up the climb to the summit of Mt Magog , the 4th highest peak (856m) in the Stirling Range National Park. This trapdoor spider is endemic to the Stirling Range. Described by Main (1985) from the holotype collected from Bluff Knoll, the spider was originally placed in the family Ctenizidae and subfamily Homogoninae. A diagnostic feature of the genus *Neohomogona* is a burrow without a door. Main noted *N. stirlingi* construct a palisade or turret of silk bound leaves and debris which are "generally sited in open, lightly covered ground..." "The palisades may project several centimetres above the ground" (p47).

Neohomogona is one of many relict spider taxa in south west WA, only found today in fragmented populations in moist habitats at higher elevations (AHDB, 2006 &2008; CALM, 1999). Prior to the aridification of Australia, moist habitats were widespread but with the progressively dryer and more seasonal climatic conditions these relict species now only survive in microhabitats that receive higher rainfall or moisture from mist. Main (2001) believes that the genera *Neohomogona/ Homogona* in south west WA and the 'sister genera' *Teyl/Namea* in eastern Australia are the "evolutionary outcome of a Cretaceous fragmentation" in an era when much of Australia was covered by lakes and inland seas. She states that "Constriction to mesophytic and/or wet sclerophyll habitats in south-western, tropical and montane eastern Australia of many other taxa could have also occurred at this time" (p14). Of particular significance to the implications of climate change is Main's statement that although such relic taxa still persist today they "show little or no adaptation to aridity and are vulnerable to summer drought and fire" (p14).

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Other Group's activities – Proposed launch of new children's Birdwing book, Sunday 27th November, Gold Coast Regional Botanic Gardens. Ph. Lyn Reilly 07 5537 3354

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Mangrove Excursion

What: A walk along the Lota Boardwalk where we should see a variety of butterflies and other insects.

When: **Saturday 22nd October, 2011**

Where: Meet **10 am** at the entrance to the boardwalk, Bill Lamond Park, Whites Road, Lota

RSVP: Phone Rob MacSloy for details on 07 3824 4348

Planning and Management Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members.

When: **Saturday 12th November, 2011** from **1.30 pm**

Where: Mt. Cotton

RSVP: Lois Hughes on 3206 6229 for directions

Excursion to the Tweed Region

What: Club member Greg Newland will host a visit to his home territory and guide us to Mt Warning National Park where we hope to see Richmond Birdwing butterflies and to the Tweed Valley Botanical Gardens with its Regent Skipper habitat.

When: **Saturday, November 26th, 2011**

Where: We will assemble at the World Heritage Rainforest Centre in Murwillumbah by **9am**. The Centre, on the corner of Tweed Valley Way and Alma Street virtually opposite the Murwillumbah Railway station, is on the south bank of the Tweed River

Bring: Your camera, hat and walking shoes together with food and drink to enjoy lunch in a bush setting.

While your **RSVP** is not essential, it would be welcome by November 25th. You may contact me, Ross Kendall, by land line (07 3378 1187), by mobile phone (0402 254 370) or by email (ross@butterflyencounters.com.au)

Disclaimer

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

Acknowledgments

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provided the cover painting
- Daphne Bowden who works on layout, production and distribution
- John Moss, Michael Rix, Robert Raven, Roger Kitching, Shona Hocknull and Christine Lambkin for scientific referencing and proof reading of various articles in this issue of the magazine
- Printing of this publication is proudly supported by Brisbane City Council

We would like to thank all these people for their contribution.

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Butterfly and Other Invertebrates Club Inc.
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Next event – Mangrove Excursion, Lota Boardwalk – Saturday 22nd October 2011. See Programme for details